PERSONAL LISTENING DEVICE FOR ARENA EVENTS

Technical Field

The invention disclosed herein relates to sound distribution systems, and more particularly to a system and method for real-time distribution of sounds emanating from an event to those in attendance at the event.

Background of the Invention

Sporting events have become a part of the American culture, oftentimes serving as a focal point around which friends and families gather. Fans hungrily devour sports information and discuss the latest game. To serve this ravenous interest, various enterprises have sprung up, including sports-oriented networks, websites and magazines. The goal of each of these services is to give each fan what he or she most desires: to be closer to the game.

Nowhere can a fan be closer to a game than by actually attending the game in a front-row seat. With a front-row seat, every nuance of the game can be seen and heard. Coaches and players can be overheard. Players can be heard shouting encouragements and discussing strategy. A front-row seat permits a fan to experience the game in a personal and dramatic way. Front-row seats are exciting. Unfortunately, front-row seats are not available to everyone.

Fans who attend sporting events, but are not lucky enough to possess front-row tickets find their experiences to be more remote. Small gestures by the players and coaches cannot be seen from a distance. The various sounds of the game go unheard. The shouts of players become inaudible. It is impossible to hear coaches and players discussing the game. Even the sound of a bone-crunching tackle cannot be heard. Quite simply, the game loses some of its drama.

To counteract the negative effects of distance, fans have employed many strategies. Many fans bring binoculars to aid them in seeing the visual nuances lost with distance. Other fans bring radios to permit them to hear a broadcast of the game. Radio broadcasts are not effective surrogates for a front-row seat, however. Radio broadcasts do not carry sounds collected from the field of play, nor do such broadcasts carry sounds

collected from areas immediately surrounding the field of play (such as dugouts or team benches). Additionally, radio broadcasts are typically delayed so that they are not synchronized with the game as it actually occurs. An additional drawback of radio broadcasts is that they carry a narrative of the game, an often unwanted feature for a fan that is already able to discern the major developments of the game.

Some fans bring hand-held televisions to sporting events. Hand-held televisions also have drawbacks, though. They are small and require the fan to remove his attention from the field of play, instead turning it to the television. Additionally, the broadcast is delayed. Most importantly, when viewing a televised sporting event, the fan is receiving a produced version of the game, rather than a true-to-life front-row experience.

The inadequacies of radio and television broadcast are reflected in the attendance figures for professional sports. Many professional sports teams fail to sell-out a significant number of their games, leading to several undesirable results. Often, in response to low attendance figures, professional sports organizations are forced to lower ticket prices for seats that offer a less intimate game-time experience. Some leagues impose television blackouts with respect to games that fail to sell-out, thereby inducing further losses due to lost television revenue. Even if tickets are sold, non-attendance results in lost concession and souvenir sales. Low revenues—whether the low revenues stem from unsold tickets or from non-attendance—are also a major factor in the relocation of professional sports franchises. Relocation of professional sports franchises is troubling on two fronts. When a professional sports franchise relocates, the community that loses its franchise loses a source of community pride and entertainment. Additionally, professional sports leagues that permit its franchises to move often suffer from fan cynicism, with many fans choosing to turn away from the particular sport entirely, thus resulting in further lost revenue for the league as a whole.

To preserve fan interest in and attendance of sports events, there exists a need for a method or system for providing fans with an experience approximating the close, exciting, and personal feel of a front-row ticket.

Summary of the Invention

The method and apparatus in accordance with the present invention solves the

aforementioned problem and other problems by transmitting sound generated at an event to those in attendance at the event. This is accomplished by a system that collects an acoustic audio signal generated at a first location within a fixed space. In some emodiments, the system also conditions the audio signal without introducing audio signals generated from outside said first location. Finally, in some embodiments, the system transmits the conditioned audio signal to a receiver worn by at least one of a plurality of individuals within the aforementioned fixed space. This invention is particularly useful in settings such as a football stadium, a basketball arena, a hockey arena, a baseball stadium, an auditorium, a performance area in a restaurant or cruise ship, a soccer arena, a boxing ring or wrestling ring, an automotive racing track, or any other space within which a performance takes place.

In another embodiment of the invention, the system collects an audio signal generated at a first location within a fixed space. The system then transmits, under a first transmission protocol uniquely associated with a particular event and first location within the fixed space, the audio signal collected from the first location to a receiver worn by at least one of a plurality of individuals within the fixed space. Finally, the audio signal is received by a receiver that is configured to operate under the aforementioned first transmission protocol.

In yet another embodiment of the invention, the system collects an audio signal generated at a first location within a fixed space at a particular event. Next, the system transmits, under a particular transmission protocol uniquely associated with the particular event, the audio signal to a receiver worn by at least one of a plurality of individuals within the aforementioned fixed space and at a distance from the aforementioned first location such that said individual would not otherwise hear the audio signal generated at the first location. Finally, a fee is charged to individuals in attendance at an event within the aforementioned fixed space in exchange for the aforementioned earpiece.

In yet another embodiment of the invention, the system collects an audio signal generated at a first location within a fixed space at a particular event. Next, the system transmits, under a particular transmission protocol uniquely associated with the particular event, the audio signal to a receiver worn by at least one of a plurality of individuals within the aforementioned fixed space. Finally, revenue is derived from the distribution

of the earpiece.

In yet another embodiment of the invention, a system for distribution of sound within a fixed space is comprised of one or more audio collection units for collecting one or more audio signals from one or more locations with a fixed space. Additionally, one or more signal conditioning units are coupled to the aforementioned one or more audio collection units for conditioning the aforementioned one or more audio signals without introducing an audio signal generated from outside the aforementioned one or more locations. Finally, one or more transmitters are configured and arranged to transmit the aforementioned one or more audio signals under one or more transmission protocols, such that each of the aforementioned one or more audio signals is transmitted under its own transmission protocol, with the transmission protocol under which each of the aforementioned one or more audio signals is transmitted being uniquely associated with a particular event.

Brief Description of the Drawings

FIG. **1** depicts a system and method for collecting sound generated at one location within a defined space and transmitting it to another location within that defined space.

FIG. **2** depicts a system and method for collecting sound generated at more than one location within a defined space and transmitting it to another location within that defined space.

FIG. **3** depicts a system and method for the use of particular transmission protocols on an event-by-event basis.

FIGS. **4A-4C** depict various embodiments of transmitters in accordance with the present invention.

FIGS. **5A-5C** depict various embodiments of receivers in accordance with the present invention.

FIG. **6** depicts a system and method for the use of multiple transmission protocols to enable a microphone-by-microphone selection.

FIG. **7** depicts one business method in accordance with the present invention.

Detailed Description of the Invention

Figure **1** illustrates the principle that sound that is generated at a point of interest within a fixed space can be collected and redistributed to members of an audience within that fixed space. Generally, the aforementioned fixed space is defined by the boundary of the audience in attendance at an event. For example, if the event in question is a football game, the point of interest at which sound is being collected might be the line of scrimmage, and the fixed space might be defined by the football stadium in which the audience is contained. Figure **1** diagramatically represents a football arena as one example of an environment in which the system and method could operate. One skilled in the art would understand that the system described herein could operate in any fixed space. On the field **100** of play, sounds are generated by athletes engaged in the activity of playing football (for example, calling out audibles, engaging in banter, or making vicious tackles). Sounds are also generated up on areas immediately surrounding the field **100** such as players' benches and visiting and home sidelines. Fans are illustrated as sitting in stands **102**. Some fans are seated in regions too remote from the field **100** of play to be able to hear the noises generated thereon or thereabout. Accordingly, the system and method collects the sounds from immediately on the field or thereabout the field and redistributes that sound to the fans in the bleachers **102**. Some of the fans may be situated in such a fashion that they could not oridnarily hear some of the sounds being transmitted.

The system is generally comprised of an audio collection unit **104** (which receives an acoustic signal and transduces it into an eletrical signal), a signal conditioning unit **106** (which receives the transduced electrical signal from one or more audio collection units **104** and filters, mixes and/or switches the signal(s) to produce an appropriate signal for transmission), and a transmitter **108** (which transmits the signal provided by the signal conditioning unit **106**). The audio collection unit **104** may be comprised of any form of microphone suitable for collecting noise from the field **100** of play and regions immediately thereabout. One example of such a microphone is a parabolic microphone, as is customarily used for collecting sound during sports broadcasts.

The signal conditioning unit **106** may include mixers for adjusting the level of multiple sources of audio signals, filters for filtering out frequency content not desirable

in an audio signal, and switches for selecting amongst audio sources. Signal conditioning unit **106** serves as an interface between audio collection unit **104** and transmitter **108** and is therefore coupled either directly or indirectly on its input side to audio collection unit **104** and either indirectly or directly on its output side to transmitter **108**.

Transmitter **108** receives the conditioned signal from signal conditioning unit **106**, amplifies the signal, modulates the signal, and transmits the signal throughout the fixed space (in this case a football arena). A representative fan **110** is shown sitting in bleachers **102** wearing a receiver **112**. Receiver **112** is configured and arranged to receive the signal transmitted by transmitter **108** and deliver an audio signal to fan **110**. Fan **110** is thereby provided with an audio source simulating the effect of his having sat in a front-row seat or having been immediately on or about the field **100** of play. Transmitter **108** is shown in greater detail in Figures **4A-4C**.

As stated earlier, Figure **1** depicts a football arena for illustrative purposes only. The system and method described in Figure **1** would be equally well suited to an enclosed space defined by a basketball arena, a hockey arena, a baseball stadium, an auditorium, a performance area in a restaurant or cruise ship, a soccer arena, a boxing ring or wrestling ring, an automotive racing track, or any other space within which a performance takes place.

Figure **2** illustrates the principle that sound may be collected from many points on or about the field. In Figure **2**, the audio collection unit is shown as being comprised of two parabolic microphones **200, 202**. The field **100** of play is shown as being divided into two regions **204, 206**. Region **204** is primarily recorded using parabolic microphone **200**. Similarly, region **206** is primarily recorded using parabolic microphone **202**. Parabolic microphones **200, 202** are connected on their output end either directly or indirectly to signal conditioning unit **106** which receives the signals, potentially mixing, filtering and switching the signals, and then outputs a conditioned signal to transmitter **108**. The signal transmitted to fan **110** may thus be produced by switching and mixing between various microphones **200, 202**.

For example, rather than moving the audio collection unit along the field as the point of interest changed, as might happen when a football team moves up and down a field, multiple microphones **200, 202** may be situated along the football field. As the ball

is moved up or down the football field, a producer may, using the signal conditioning unit **106**, raise the signal level of a microphone that collects sound from a region of the field upon which the ball is located. Microphones located near a region of the field more remote form the ball may be progressively mixed down or switched off altogether. Additionally, a sideline conversation of particular interest may be mixed up, mixed down or turned off altogether. Thus, in keeping with the principle just discussed, it follows that although the field **100** is shown as being divided into two regions **204, 206** recorded by two parabolic microphones **200, 202**, the field **100** may actually be divided into as many regions as is necessary to conveniently record the game. It is understood that each region will be recorded by its own microphone.

Although Figure **2** shows each microphone **200, 202** as being physically connected via a cable to signal conditioning unit **106**, it is understood that this connection may be indirect and accomplished via transmission.

One anticipated method for the use of the system depicted in Figures **1** and **2** involves the sale of receiver **112** to one or more fans **110** in attendance at a particular event within the stadium. Since this profit model is reliant upon fan **110** purchasing a receiver **112** for each event that fan **110** attends, it is important that a receiver **112** sold to a fan **110** for a particular event not be functional during a following event. Figure **3** illustrates a system and method designed with this constraint in mind.

As can be seen from Figure **3A**, during a first event, transmitter **108** transmits its collected signal via a first transmission protocol uniquely associated with the first event. The fan **110** in attendance at the first event is wearing a receiver designed to operate and receive transmissions made in accordance with the first transmission protocol. During a second event, depicted in Figure 3B, however, transmitter **108** will be transmitting under a second transmission protocol, so that if a fan **110** in attendance at the second event tries to use a receiver from the first event, that fan **110** will be unable to receive the transmission that is being broadcasted. The inoperability of the receiver purchased at the first event stems from the fact that that receiver was designed to receive transmissions made in accordance with the first transmission protocol, but the broadcast at the second event is made in accordance with a second transmission protocol. Therefore if a fan **110** wishes to receive the service of having sounds collected on or about the playing field

transmitted to him, he must purchase a receiver at the second event, and may not receive the transmission using a receiver purchased at the first event.

Figures **4A-4C** depict three transmitters **401, 411, 421** capable of transmission under varying transmission protocols. One skilled in the art would understand that the transmitters depicted in Figures **4A, 4B** and **4C** are exemplary only and that many other such transmitters could serve the purpose of transmitting using differing transmission protocols from event to event.

Turning to Figure **4A**, therein is depicted a transmitter **401** which alters its transmission protocol by simply carrying its signal on a different carrier frequency from game to game. The transmitter **401** of Figure **4A** is shown as receiving two audio sources **400**. In principle, the transmitter **401** of Figure **4A** could receive any number of audio sources, including only one audio source. The audio sources **400** are supplied to a mixer **402**. The mixer **402** adjusts the relative signal strength of each audio source **400** received by it. The mixer **402** may also have switching ability, allowing the mixer **402** to completely turn off a particular audio source **400**. Mixer **402** may also contain filters designed to eliminate signal components and frequency ranges that are undesired. Mixer **402** may also be embodied in an electrical component separate from transmitter **401**. For example, one skilled in the art would understand that mixer **402** may be embodied within signal conditioning unit **106**. Modulator **404** is coupled to the output of mixer **402** and receives the mixed signal, using that mixed signal to modulate a carrier signal. The frequency of the carrier signal to be modulated is a selectable value. The output of modulator **404** may be filtered to eliminate signal components in frequency ranges that are undesired. The output of modulator **404** is then fed to amplifier **406**. Amplifier **406** is designed to receive a signal from modulator **404** and amplify it by a certain gain factor, such that when the output of amplifier **406** is fed to antenna **408**, the resultant transmission will be strong enough to reach about the defined space such as a football arena, but not significantly further.

By selecting a different frequency to be employed by modulator **404** from event to event, a fan **110** can be discouraged from trying to bring a receiver **112** purchased at one event to a subsequent event. For example, consider a situation in which the transmitter of Figure **4A** is used at a football arena that houses ten home games a year. If

at the first home game a first frequency is used as a carrier signal, a fan **110** wishing to receive the transmission would be required to have a receiver designed to receive a signal carried by at that frequency. If at the second home game the frequency used as a carrier signal by modulator **404** is selected to be a second frequency (different from the first frequency), then a receiver **112** purchased by a fan **110** at the first home game would not be useful to receive the signal transmitted at the second home game. Therefore, fan **110** would be obliged to purchase another receiver **112** at the second game if he wished to receive the transmitted sounds from the playing field. Thus, by changing the frequency at which the transmission will be carried from game to game or from event to event, a fan can be discouraged from only purchasing a single receiver, rather than purchasing a receiver at each event.

Figure **4B** depicts a transmitter **411** employing digital transmission and direct sequence spread spectrum technology. This type of transmitter may be useful for at least the following reason. It is possible that, if the transmitter **411** of Figure **4A** were employed using simple amplitude modulation or frequency modulation, a fan could receive the transmitted signal by bringing a scanner to the game, thereby receiving the broadcast service for free. To minimize that risk, the modulator **404** shown in Figure **4A** could use a modulation technique not ordinarily employed by scanners, such as phase modulation. However, even that would have certain drawbacks. The spectral space in which the transmitter of Figure **4A** is likely to be permitted to transmit in by the FCC is likely to be limited. Therefore, there will only be a limited number of carrier frequencies from which to choose. It follows, then, that at some point over a certain number of games, carrier frequencies may have to be reused, in which case a fan could use a receiver he had purchased from a previous game to receive the broadcast. However, the transmitter **411** depicted in Figure **4B** uses both carrier frequency and spreading code set as variables which can be altered to determine the transmission protocol. Therefore, a greater number of transmission protocols can be employed by using the transmitter depicted in Figure **4B**.

Like the transmitter **401** of Figure **4A**, the transmitter **411** of Figure **4B** is able to receive multiple audio signals **400**. Also like the transmitter of Figure **4A**, the transmitter of Figure **4B** employs a mixer **402** that is capable of adjusting the relative signal strength

of the multiple audio signals received by its input stage. Mixer **402** also may also employ switches enabling the mixer to completely turn off certain audio sources. The output of mixer **402** may contain a filter to eliminate signal content and frequency ranges that are undesired. Mixer **402** may also be embodied in an electrical component separate from transmitter **411**. Sampler **410** is connected to the output stage of mixer **402** for the purpose of periodically sampling and thereby digitizing the output of the mixer **402**. Sampler **410** delivers its digitized signal to spreader **412**. Spreader **412** receives a signal that has been sampled at a certain number of samples per second and using a set of codes, breaks each sample into a larger string of ones and zeros known as "chips." Because the signal when expressed with chips contains more chips per second than bits per second, the Nyquist frequency of the chipped signal is greater than the Nyquist frequency of the sampled signal and therefore has a wider spectrum. As will be shown in Figure **5B**, a receiver employing direct sequence spread spectrum technology must employ the same codes as the transmitter in order to receive the signal. The signal from the spreader **412** is then fed to modulator **414,** which like the transmitter of Figure **4A**, uses a selectable frequency to set the frequency of the carrier signal that is being modulated against the output from the spreader **412**. The signal generated by modulator **414** is then fed to amplifier **416,** which amplifies the signal to a signal strength sufficient to broadcast the signal via antenna **418** throughout the enclosed space such as a football field without extending significantly further.

The transmission protocol employed by the transmitter **421** of Figure **4C** is defined by the frequency of the carrier signal selected by the modulator and the key used by an encrypter container within the transmitter. Like the transmitter of Figure **4B**, the transmitter **421** illustrated in Figure **4C** can receive multiple audio signals on its input. Also like the transmitter of Figure **4B**, the transmitter **421** of Figure **4C** contains a mixer **402** at its front end. The mixer **402** has the ability to adjust the relative signal strength of its multiple audio inputs. Mixer **402** may also have switching ability so as to be able to turn on and off a particular audio source or sources. The output stage of mixer **402** may have a filter designed to attenuate signal components in frequency ranges that are undesired. Mixer **402** may also be embodied in an electrical component separate from transmitter **421**. The output stage of mixer **402** is fed to a sampler **410** that samples the

mixed signal at a particular rate, thereby producing a digitized signal. The digitized signal is then fed to an encrypter **420**. The operation of encrypter **420** is determined by the encryption key that it employs. The encryption key is programmable so that it may be changed from use to use and therefore from event to event. The output of encrypter **420** is an encrypted digital signal that is fed to modulator **422,** which modulates a carrier signal of a selectable frequency. The output of modulator **422** is delivered to amplifier **424**, which amplifies the signal to a certain signal strength sufficient to reach throughout the defined space, such as a football stadium, when transmitted by antenna **426**.

Like the transmitter of Figure **4B**, the transmitter **421** of Figure **4C** is able to employ relatively more transmission protocols in a finite spectral space because its transmission protocol is defined by frequency and one other variable, in this case an encryption key. As will be seen in the discussion related to the receiver revealed in Figure **5C**, a receiver intended to operate with this transmitter must use the same encryption key or a matched decryption key in order to properly receive the transmitted signal.

The transmitters **401, 411, 421** depicted in Figures **4A - 4C** may be fixed or may be mobile and are presented as examples of transmitters that may be suitable for such an application. One skilled in the art would understand that many such transmitters would be suitable for this application.

Figures **5A-5C** depict receivers **501, 511, 521** suitable for embodying the method and apparatus depicted in Figures **1-3**. Figure **5A** depicts a receiver **501** suitable for receiving a signal transmitted by the transmitter **401** of Figure **4A**. Figure **5B** depicts a receiver **511** suitable for receiving a signal transmitted by the transmitter **411** of Figure **4B.** Figure **5C** depicts a receiver **521** suitable for receiving a signal transmitted by the transmitter **421** of Figure **4C**.

The receiver **501** of Figure **5A** has an antenna of appropriate geometry to receive a signal transmitted at the particular carrier frequency used by the transmitter of Figure **4A**. The output of antenna **500** therefore contains the modulated carrier signal that was output from amplifier **406**. Demodulator **502** has its input stage coupled to antenna **500**, thereby receiving the aforementioned carrier signal. Demodulator **502** takes the modulated carrier signal and restores it to its baseband form. The output of

demodulator **502** may contain a filter or set of filters intended to remove signal components of undesired frequency ranges. The operation of demodulator **502** can be controlled by selecting the frequency it uses to demodulate the received signal, thereby allowing the receiver **501** to operate under a transmission protocol suitable for receiving the transmission of the transmitter depicted in Figure **4A**. At its input stage, amplifier **504** receives a signal emanating from the demodulator **502**. Amplifier **504** amplifies the signal to a suitable signal strength so that the user of this receiver is able to hear the signal coming out of speaker **506**.

The receiver **501** depicted in Figure **5A** may be disposable or may be recyclable. The receiver of Figure **5A** may also be optionally fashioned in the form of an earpiece or personal speaker of some form to permit only one user at a time to listen to the signal produced by speaker **506**. In fashioning the receiver **501** of Figure **5A** in this manner, each member of a party will be forced to purchase the receiver of Figure **5A** in order to enjoy its associated service.

The receiver **511** of Figure **5B** has an antenna **508** of suitable geometry to receive the signal transmitted by the transmitter of Figure **4B**. Therefore, the output of antenna **508** contains the modulated carrier signal delivered by amplifier **416**. Demodulator **510** is coupled at its input stage to the antenna **508**. Demodulator **510** takes the signal encoded on the carrier signal and restores it to its baseband form. The operation of demodulator **510** is determinable by selecting the frequency used to demodulate its input. The output of demodulator **510** may contain one or more filters designed to eliminate signal components having undesirable frequency ranges. The output of demodulator **510** is therefore a sequence of chips, otherwise known as a "spread spectrum signal," and is fed to correlator **512**. Correlator **512** correlates the spread spectrum signal provided by demodulator **510** against a set of spreading codes, thereby yielding the original unspread signal. The operation of correlator **512** is determined by the code set against which the correlation is performed, and may therefore be selectable by programming the code set. The output stage of correlator **512** may include digital-to-analog converter to restore the digital signal to an analog form, and may also include one or more filters to remove signal components having frequency ranges that are undesirable. Amplifier **514** receives the signal emanating from correlator **512**. Amplifier **514** amplifies the signal strength of

its input so that the user of the receiver depicted in Figure **5B** is able to hear the signal when it is played by speaker **516**.

The receiver **511** depicted in Figure **5B**, like the receiver **501** depicted in Figure **5A**, may be fashioned in the form of an earpiece or some form of personal listening device so as to permit use by only one fan or person at a time. Also like the receiver **501** of Figure **5A**, the receiver **511** of Figure **5B** may be disposable or may be recyclable.

The receiver **521** of Figure **5C** has an antenna **518**, the geometry of which is designed to permit the antenna **518** to receive the signal transmitted by the transmitter of Figure **4C**. Accordingly, the output of antenna **518** contains the modulated carrier signal delivered by amplifier **424**. Demodulator **520** receives at its input stage the signal from the antenna **518** and, like demodulators **502** and **510**, demodulator **520** has a selectable frequency to permit demodulation of signals centered about various carrier frequencies. Demodulator **520** may have a filter or set of filters on its output stage to attenuate signal components having undesirable frequency ranges. The output of demodulator **520** is fed to decrypter **522**. The operation of decrypter **522** is controlled by a selectable key. The key used in conjunction with decrypter **522** should be the same key used by encrypter **420,** or should be a matched key. The output stage of decrypter **522** may have a digital-to-analog converter to restore the decrypted digital signal to its original analog form. The output stage of decrypter **522** may also have one or more filters designed to eliminate signal components in unwanted frequency ranges. The input stage of amplifier **524** receives the signal delivered from decrypter **522**. Amplifier **524** operates to amplify its output to a signal strength, such that the user of the receiver depicted in Figure **5C** will be able to hear the audio signal when the output of amplifier **524** is played through speaker **526**.

The receiver **521** of Figure **5C**, like the receivers **501, 511** of Figure **5B** and **5A,** may be fashioned as an earpiece or any form of personal listening device for the same reasons as stated above. The receiver **521** of Figure **5C** may also be either deposable or recyclable.

The receivers **501, 511, 521** depicted in Figures **5A-5C** may be fashioned to be operable for a set of events, such as an entire season of sports events. For example, rather

than being conifgured for usage during a single event (such as a football game), the receivers of Figures **5A-5C** receiver may be configured to use a particular protocol for an entire season. Alternatively, the receivers **501**, **511**, **521** of Figures **5A-5C** may be configured to permit use of a range of pre-scheduled protocols identified for use during a season of events (such as an NFL season). For example, if it were determined that a particular professional football team would use ten protocols during ten home games, the receivers **501**, **511**, **521** of Figures **5A-5C** may be conifgured to selectably operate under those ten protocols. Thus, a fan would be enabled to purchase a single receiver and yet receive the service for an entire season.

Figure **6** illustrates the principle that the sound collected by various audio collection units can be transmitted simultaneously during the same event, yet transmitted under different transmission protocols, thus allowing a recipient of the service to choose among the various audio collection units for reception. As can be seen from Figure **6**, audio collection unit **600** receives sound from one region of the playing field, while audio collection unit **606** receives sound from another region of the playing field. Although Figure **6** shows the various audio collection units collecting sound from various regions of the field, it is possible that audio collection units could be used to collect sound from, for example, a home sideline and a visiting sideline, an offensive huddle and a defensive huddle, or a home dugout and a visiting dugout.

As shown in Figure **6**, each audio collection unit **600**, **606** is connected to its own signal conditioning unit **602**, **608** and transmission unit **604**, **610**. As can also be seen, each transmission unit **604**, **610** operates under its own transmission protocol. A fan using the service wears receiver **612**, and can choose to tune into one transmitter or the other. This fan's choice could be aided by the distribution of a menu that allows the fan to know which transmission protocol correlates with which audio collection unit. For example, upon entry of a stadium, a fan could be passed a menu revealing that transmission protocol #1 will allow him to listen to an offensive huddle, transmission protocol #2 to a defensive huddle, protocol # 3 to a visiting sideline, transmission protocol #4 to a home sideline, and transmission protocol #5 to the region of the field where the ball is, and so on.

Although Figure **6** shows each audio collection unit **600**, **606** being connected to

its own signal conditioning unit **602**, **608** and its own transmission unit **604**, **610**, each audio collection unit **600**, **606** could be connected to a single central signal conditioning unit which could be connected to a single transmission unit which would transmit each signal collected by each audio collection unit using different transmission protocols.

The system and method of Figure **6** could be implemented using the transmitter and receivers shown in Figures **4A-4C** and Figures **5A-5C** so that the transmission protocol could be defined based upon either purely frequency, or a combination of frequency and spreading code set or a combination of frequency and encryption key. A user of the service would then wear the receiver **612** and select either simply the frequency that he wished to tune in or the frequency in combination with the spreading code set or the frequency in combination with the decryption key.

The systems and methods shown in Figures **1-6** share some common properties. For example, the transmission shown by the method and system of Figures **1-6** is contemporaneous with the event from which the sound is being collected so that minimal delay is introduced between the collection of the signal and the transmission of the signal. In other words, a fan receiving the transmission and watching the game would notice little delay between the events witnessed and the sound transmitted to him. Another property shared in common by the systems and methods in Figures **1-6** is the absence of two-way communication. In other words, the user of the service has no ability to communicate with the transmission unit. Another characteristic shared in common by the systems and methods of Figures **1-6** is that the sound being transmitted is the result purely of the sound being collected from on or about the playing field or area of interest, and does not include a narrative of the event, as would be found in a conventional radio or television broadcast. Stated otherwise, the sound being transmitted is, in large part, the saoud being collected from the audio collection units, with few additions. It is contemplated, however, that advertizing could be transmitted between plays, for instance, or that other insignificant sound could be mixed with and transmitted with the sound collected from the field.

Figure **7** illustrates one particular business method by which the systems and methods described in Figures **1-6** could be employed. As can be seen in Figure **7**, at least two profit models could be employed. In operation **700**, a profit model is employed

whereby each fan purchases a receiver, if that fan desires to be a recipient of the broadcast service. In operation **702**, a profit model is shown wherein commercial time is sold to those who would wish to purchase advertising. Commercial transmission may take place at various intervals during an event such as between plays, during scheduled commercial breaks, between quarters and during halftime, between periods or innings, etc. Operations **700** and **702** could be employed conjunctively, meaning that one could both sell the receivers and sell commercial time. Operations **700** and **702** could also be employed disjunctively, meaning that one could either sell the receivers or sell commercial time, without doing both. Operation **704,** which follows either the conjunctive or disjunctive performance of operations **700** and **702**, requires that the audio signal of the particular event be collected and subsequently transmitted to receivers located within the space defined by the arena, stadium, theater, etc. in operation **706**. Operation **708,** which is performed at the termination of the service, shows that the receivers may either be disposed of or recycled. If a recycling model is used, fans could return the receivers in exchange for the return of a deposit and receivers could be reprogrammed at a later time with a different set of transmission protocols.

From the foregoing detailed description and examples, it will be evident that modifications and variations can be made in the devices and methods of the invention without departing from the spirit or scope of the invention. Therefore, it is intended that all modifications and verifications not departing from the spirit of the invention come within the scope of the claims and their equivalents.